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in the museum of Rutger's College a section of the trunk of *Liriodendron* having a circumference of 21 feet. The specimen was obtained at Marlborough, N. J.

Vitality of Gourd Seeds.—A remarkable case of duration of vitality in the seeds of a cucurbit was mentioned by Mr. Le Roy. In the Torrey collection there is a specimen of a gourd which was obtained between the years 1838 and 1842, in Patagonia, by the Wilkes Exploring Expedition. Finding three seeds still remaining in the specimen, Mr. Leroy planted them in his garden. Two of the seeds germinated, and the plants are now in fruit. For want of the necessary figures and descriptions, the species has not yet been identified.

Dr. T. F. Allen read a paper on the "Similarity between the *Characeae* of America and those of Asia."

§ 83. **Polyporus volvatus,** Peck, **and its Varieties.**—Since the publication of the description of this fungus in the Twenty-seventh New York State Museum Report, other forms of the species have come to my knowledge, and other observations have been made which render some additional notice of it desirable, since it presents two characters which may perhaps be deemed of more than mere specific value. The most conspicuous one is the remarkable prolongation of the margin of the pileus. This extends beyond and beneath the mouths of the pores like a thick coriaceous veil, and either wholly or partly conceals them from view. In two of the varieties* the veil opens below by a well defined circular or subelliptical aperture, usually about one-fourth of an inch in diameter. Through this aperture the spores have a way of escape, although it is so much smaller than the hymenial surface that it is not unusual to find little heaps or even masses of spores retained within the veil. These heaps of spores are generally permeated by minute filaments which apparently aid in holding the spores together. The aperture is not exactly in the centre of the veil, but nearer the posterior than the anterior surface of the fungus. The veil is a little thicker just anterior to the aperture than it is elsewhere. The thin epidermis generally disappears from the veil, so that in mature specimens this part is often a little paler than the rest. If this is cut away the remaining part of the pileus is nearly hemispherical. The hymenophore or non-porous part of the pileus, in fresh specimens, is separable into two parts. The exterior, which, by its continuation beyond the mouths of the pores, forms the veil, may be torn away from the thin interior part which lies next to and is intimately connected with the pores, very much as the rind of an orange may be peeled from the pulp. The thin interior stratum is also slightly prolonged beyond the mouths of the pores and its prolongation forms a kind of prominent margin to the hymenial surface. The other character is found at the mouths of the pores. Not only are the dissepiments here differently colored, but they are also decidedly and permanently thicker than they are elsewhere, thus making the diameter of the pore much less at the mouth than it is a little distance above. The hymenial surface appears very much as if it had been thinly overspread by some colored, yielding but inelastic substance, and then punctured by the point of a pin just over each pore. The prominence of the interspaces causes the pores to appear as if in little depressions. Are the characters now noticed of generic value? Possibly some may so regard them; and, certainly, genera of fungi have been constituted upon far less obvious characters than these; but until other species are known which shall give emphasis to the importance of these characters it seems best to me to consider them merely sectional or at most subgeneric. Without them the species would naturally fall in the Suberose section of the *Placodermei*. In this section is the birch *Polyporus*, (*P. betulinus*,) a species in which also the margin of the pileus extends beyond the mouths of the pores, but to a far less extent. It never even partially conceals them from view. In this species also, the pores and a very thin layer of the hymenophore to which they are attached are separable in the fresh plant from the main part of the pileus. Thus it makes an approach to the aberrant characters of *P. volvatus*; slight, indeed, but sufficient to indicate the relationship of the latter to more typical *Polypori* and to cast a doubt upon the generic value of the characters indicated. That the mouths of the pores should present a color unlike the rest might not, of itself, be considered a very important or novel feature, but the permanent thickening of the dissepiments at this place and the consequent diminution here of the diameter of the pores is a character not clearly shown by any other *Polyporus* known to me. It may, therefore, be well to make at least another section of the *Placodermei* for the reception of this fungus.

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* In the variety *Torreyi* no aperture has yet been seen, but one probably exists in fully and properly developed specimens.

The typical form of the species has been found on dead trunks of the black spruce, *Abies nigra*. It occurs on these plentifully in some parts of the Adirondack forests of New York, where it follows the devastating track of the spruce-destroying beetle. Dozens of specimens may be found on the trunk of a single tree, and generally each specimen covers a perforation previously made in the bark of the tree by the attacking beetle. The mycelium grows beneath the bark and the perforations afford a convenient passage-way to the external air where the fungus is developed. Any crevice in the bark, however, will answer the same purpose, so that the fungus is not dependent on the perforations of the beetle for its full development and the continuance of its species. The average size of the specimens is from one-half to three-fourths of an inch in diameter. Rarely do they exceed one inch in diameter. The color of the mouths of the pores is a pale cinnamon-brown.

A second form has been collected in California by H. W. Harkness, M.D., who finds it on the twisted pine, *Pinus contorta*, and on one or two other coniferous trees. A single specimen was once found by the writer. It grew on pitch pine, *Pinus rigida*, near Albany, New York. This form is generally larger than the other, its average diameter being about one inch. The mouths of the pores are also generally darker colored. Specimens of it were sent to England and there received the name *Polyporus obvolutus* Berk. and Cke., (*Grev-*

illea, Vol. vii. p. 1.) but no description was published with the name. It can not well be considered a distinct species, as the differences between it and the other form are only those of size and color. Specimens of it have been distributed by Mr. J. B. Ellis in Century IV, North American Fungi. A third and more distinct form comes also from California. For my information concerning it I am indebted to Mr. W. R. Gerard who informs me that the herbarium of the late Dr. Torrey contained three specimens (all that are known) which bore the record—" In Sandy Desert, California." All had a distinct lateral stem, as shown in the annexed figure, and, in all, the veil-like prolongation of the margin of the pileus was entirely closed. Nevertheless the spores were well developed and the mouths of the pores had the dark-brown color that exists in the other Californian specimens. No record was found concerning the matrix on which the specimens grew, but Mr. Gerard suggests that it was probably some small twig, judging from the appearance of the base of the stem. The size of the pileus was about the same as in the other Californian specimens.

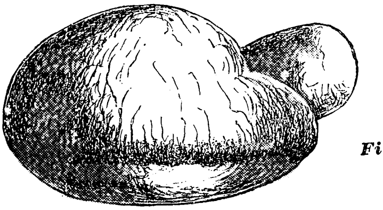

Fig. 1.

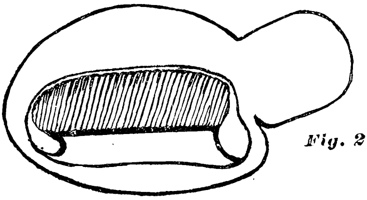

Fig. 2.

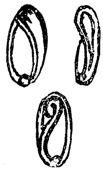

Fig. 3.

The following is a brief characterization of the section, species and varieties of this fungus.

CRYPTOPORUS.

(A section of *Placodermei.*) Pileus at first subcarnose, becoming harder or corky, sessile or stipitate, the margin greatly prolonged beyond and beneath the mouths of the pores and wholly or partly concealing them from view, generally opening beneath by a small aperture; pores not stratose, the dissepiments thickened at the mouths and there differently colored.

The only species yet known is

Polyporus volvatus, Peck.

Pileus globose or subglobose, sessile or rarely stipitate, even, glabrous, azonate, whitish, often somewhat tinged with yellowish or reddish-brown ; pores equal to or longer than the thickness of the hymenophore, the mouths punctiform, light cinnamon-brown or dark-brown ; spores pale, with a flesh-colored tint, .00035–.0005 of an inch long, about .0002 of an inch broad.

Var. *typicus.* Smaller, 6–9 lines in diameter, sessile, mouths of the pores light cinnamon-brown. On *Abies nigra.* New York.

Var. *obvolutus.* (*Polyporus obvolutus*, Berk. & Cke.) Larger, 10–15 lines in diameter, sessile, mouths of the pores usually dark-brown. On *Pinus contorta*, etc., California. On *Pinus rigida.* New York.

Var. *Torreyi*, Gerard, *Ms.* Larger, 10–15 lines in diameter, stipitate, mouths of the pores dark-brown. California, (*Legit* John Torrey, M.D.)

CHARLES H. PECK.

EXPLANATION OF THE FIGURES.—Fig. 1, the stipitate variety *Torreyi*, of *Polyporus volvatus*, Pk., natural size. Fig. 2, vertical section of the same. Fig. 3, spores x 1000, seen in three positions.

§ 84. **Sexuality of Croton monanthogynum.**—In 1878 I collected a few seeds of *Croton monanthogynum*, which were sown in the spring of 1879. These germinated in the spring of 1880, and are now in flower. There are four plants. Two are wholly pistillate, and two wholly staminate. So far as these four plants go, it would seem that the species is dioecious and not monoecious as described in our references.

It is interesting to note that these male plants are not half the size of the females, and this accords with similar facts in hemp, spinage and others; and with the general views explained in my Salem and Troy papers (American Association for the Advancement of Science) that a greater vital (nutritive) power is associated with the production of female than of male flowers. It is not always, however, that the lower power of nutrition is evidenced throughout the whole plant as illustrated in these instances. Often it is only on the weaker branches of the same plant that the male flowers are borne—the ones the most highly vitalized resulting in female flowers.

THOMAS MEEHAN.

§ 85. **Similarity between the Characeae of America and Asia.**—Prof. Asa Gray has well shown the similarity of the floras of the eastern parts of the two great continents in relation to other groups of plants, and I now propose to show that this resemblance extends to the *Characeae*, although as yet our acquaintance with the forms of this order, both Asiatic and American, is comparatively slight.

My knowledge of Eastern *Characeae* is obtained wholly from some articles by the late Prof. A. Braun, in *Linnaea*, Vol. 17, Ser. i. *Charae Preissianae*, and in Vol. 1 of *Hooker's Journ. of Botany*, 1847, *Characeae Indiae Orientalis etinsularum Maris Pacifici.* The former article treats of the Australian species ; the latter of those of India, Ceylon, the Sunda, Mariana and Sandwich Islands, and is of the greater interest to us. In his preface Prof. Braun says : " It is remarkable